

On page 22, line 1, change "detector 22" to --a detector--;

On page 22, line 6, after "column" (second occurrence) and before the comma, insert -
--114--;

On page 22, line 9, after "substrate" insert --117--; and

On page 22, line 26, delete "122".

IN THE CLAIMS:

Please cancel claims 2, 65, 75-104 and 108-110 without prejudice or disclaimer.

Please amend claims 1, 3-12, 16-22, 29-31, 39-43, 45-46, 50-52, 56-58, 64, 72 and 105 as follows:

1. (Amended) A sample separation apparatus, comprising:

a [silicon] semiconductor substrate; and

a matrix comprising a first porous [silicon] region [including a matrix and] extending a distance across said [silicon] semiconductor substrate.

3. (Amended) The sample separation apparatus of claim 1, wherein said first porous [silicon] region [defines] comprises a capillary column.

4. (Amended) The sample separation apparatus of claim 1, wherein said first porous [silicon] region [extends substantially] linearly traverses said [semiconductor] substrate.

5. (Amended) The sample separation apparatus of claim 1, comprising a second porous [silicon] region extending a distance across said [silicon] semiconductor substrate.

6. (Amended) The sample separation apparatus of claim 5, wherein said second porous [silicon] region [defines] comprises a control column.

7. (Amended) The sample separation apparatus of claim 1, further comprising a [reactant] reaction region [positioned] immediately situated along a length of and contiguous with said first porous [silicon] region.

8. (Amended) The sample separation apparatus of claim 7, wherein said [reactant] reaction region comprises a capture component.

9. (Amended) The sample separation apparatus of claim 7, wherein said [reactant] reaction region is [positioned] situated at a predetermined distance from an end of said first porous [silicon] region.

10. (Amended) The sample separation apparatus of claim 5, further comprising a first reaction region [disposed] situated immediately along a length of said first porous [silicon] region and a second reaction region [disposed] situated immediately along a length of said second porous [silicon] region.

11. (Amended) The sample separation apparatus of claim 10, wherein a distance between said first reaction region and an end of said first porous [silicon] region is substantially the same as a distance between said second reaction region and an end of said second porous [silicon] region.

12. (Amended) The sample separation apparatus of claim 1, further comprising at least one detector [disposed] situated proximate said first porous [silicon] region.

16. (Amended) The sample separation apparatus of claim 1, further comprising a processor on said [silicon] semiconductor substrate.

Sub
C3
Amended
17. (Amended) The sample separation apparatus of claim 1, further comprising a memory device on said [silicon] semiconductor substrate.

Subt
C7
18. (Amended) The sample separation apparatus of claim 1, further comprising a migration facilitator [associated] in communication with said first porous [silicon] region.

a3
word.
19. (Amended) The sample separation apparatus of claim 18, wherein said migration facilitator comprises a pump [operatively associated] in communication with a first end of said first porous [silicon] region.

20. (Amended) The sample separation apparatus of claim 19, further comprising a control valve [disposed] situated between said pump and said first end.

Sub
C8
21. (Amended) The sample separation apparatus of claim 18, wherein said migration facilitator comprises a vacuum source operatively [associated] in communication with a second end of said first porous [silicon] region.

22. (Amended) The sample separation apparatus of claim 18, wherein said migration facilitator comprises a first electrode adjacent a first end of said first porous [silicon] region and a second electrode adjacent a second end of said first porous [silicon] region.

Subt
C10
29. (Amended) The sample separation apparatus of claim 1, further comprising a sealing element [disposed] situated over at least a portion of said first porous [silicon] region.

a4
Sub
B4
30. (Amended) A separation apparatus, comprising:
a substrate;
at least one capillary column [defined] formed in said substrate and comprising a first porous matrix; and

Sub Bancel
a4
concl.
a detector [disposed] situated adjacent said capillary column.

31. (Amended) The separation apparatus of claim 30, wherein said substrate comprises silicon, gallium arsenide, or indium phosphide.

Sub C13
39. (Amended) The separation apparatus of claim 30, including a pump [associated] in communication with said at least one capillary column.

40. (Amended) The separation apparatus of claim 30, further comprising a valve [associated] in communication with an end of said at least one capillary column.

a5
41. (Amended) The separation apparatus of claim 30, including a vacuum source [associated] in communication with said at least one capillary column.

42. (Amended) The separation apparatus of claim 30, including a first electrode [associated] in communication with a first-end of said first capillary column and a second electrode [associated] in communication with a second end of said first capillary column.

43. (Amended) The separation apparatus of claim 30, further comprising a processor [associated] in communication with said detector.

45. (Amended) The separation apparatus of claim 30, further comprising at least another capillary column [defined] formed in said substrate.

a6
Sub C14
46. (Amended) The separation apparatus of claim 45, wherein said at least one capillary column and said at least [one] another capillary column each comprise have substantially equal lengths.

Sub C16
50. (Amended) The separation apparatus of claim 30, further comprising a sealing element [disposed] situated over at least a portion of said ~~at least one capillary column~~.

Sub B57
a7
51. (Amended) A miniature chromatograph, comprising:
a substrate;
a porous matrix [defined] formed in [a] said substrate and comprising at least one capillary column, said porous matrix comprising [; and] a plurality of pores [defined by said porous matrix].

Sub C18
52. (Amended) The miniature chromatograph of claim 51, further comprising at least one detector [disposed] situated adjacent said at least one capillary column.

Sub C19
56. (Amended) The miniature chromatograph of claim 51, further comprising a sealing element [disposed] situated over at least a portion of said ~~at least one capillary column~~.

Sub B67
a8
57. (Amended) An electrophoretic apparatus, comprising:
a [silicon] semiconductor substrate;
at least one sample column in said [silicon] semiconductor substrate and comprising a first end, a second end, and a first porous matrix which [defines] comprises a first plurality of pores;
and
a control column comprising a second porous silicon matrix comprising a second plurality of pores formed in said [silicon] semiconductor substrate [which defines a second plurality of pores].

58. (Amended) The electrophoretic apparatus of claim 57, further comprising:
a first electrode [disposed] situated proximate said first end; and
a second electrode [disposed] situated proximate said second end.

64. (Amended) An analyte detection apparatus, comprising:

a [silicon] semiconductor substrate; and

a matrix [porous column defined] formed in said [silicon] semiconductor substrate, said matrix comprising at least one porous column.

72. (Amended) The analyte detection apparatus of claim 64, further comprising a control column on said [silicon] semiconductor substrate.

105. (Amended) An ultrasmall flow channel device, comprising:

a flow inlet; and

a flow channel connected to said inlet, said flow channel [being] comprising a matrix formed of hemispherical grained silicon.

REMARKS

The Office Action dated July 21, 1999, has been received and reviewed. Claims 1 - 110 are currently pending and stand rejected. Applicant affirms his election, without traverse, to prosecute the invention of Group I, claims 1, 3-64, 66-74 and 105-107. Claims 2, 65, 75-104 and 108-110 have been canceled without prejudice or disclaimer. Applicant has amended claims 1, 3-12, 16-22, 29-31, 39-43, 45-46, 50-52, 56-58, 64, 72 and 105, and respectfully requests reconsideration of the application as amended herein.

It is respectfully submitted that the amendments to the specification and to the claims and the proposed changes to the drawings are supported by the specification as originally filed and that these amendments and changes do not introduce new matter.